

AMENDMENTS TO CLAIMS

1. (Currently amended) A method for use by a switch in a storage network, the method comprising:

receiving, by the switch, a solicitation for a storage service for storing data from a device in the storage network;

performing, by the switch, the storage service without further involvement from the device, including transmitting ~~any~~ the data required to be transmitted as a result of performing the storage service without buffering the data.

2. (Original) The method of claim 1, wherein performing the storage service further includes performing virtualization of the data without buffering the data.

3. (Original) The method of claim 1, wherein performing the storage service further includes performing translation of the data from a first protocol to a second protocol without buffering the data.

4. (Original) The method of claim 3, wherein the first protocol is iSCSI and the second protocol is Fiber Channel.

5. (Original) The method of claim 3, wherein the first protocol is Fiber Channel and the second protocol is iSCSI .

6. (Original) The method of claim 1, wherein the storage service is one of local mirroring, mirroring over slow link, snapshot, replication, third party copy, periodic backup, and restore.

7. (Original) The method of claim 1, wherein:

receiving the solicitation includes receiving the solicitation by a control card in the switch;

performing the storage service includes, determining by the control card which one or more of a plurality of linecards in the switch is required to perform the service, passing relevant information from the control card to the determined linecard, and performing the storage service by and under control of the determined linecard.

8. (Original) The method of claim 1, further including:
indicating that the storage service is complete by the switch to the device.

9. (Original) The method of claim 1, wherein the device is a server.

10. (Original) The method of claim 1, wherein the device is a management station.

11. (Original) The method of claim 1, wherein:
receiving a solicitation includes receiving, by the switch, a mirroring solicitation for a virtual target from the device; and

performing the storage service includes:

setting a flowID for the virtual target that indicates a mirrored virtual target having a first member and a second member;

receiving a data write command from an initiator to the mirrored virtual target;

multicasting the data write command to both members in accordance with the flowID;

receiving a ready-to-receive-data indicator from each member, wherein each member specifies an amount of data it can receive, the first member specifying a first amount and the second member specifying a second amount smaller than the first amount;

obtaining from the initiator the second amount of data, performing virtualization on the data without buffering the data, and transmitting the data to the first member and the second member.

12. (Original) The method of claim 11, wherein setting a flowID for the virtual target includes updating a virtual target descriptor with the flowID.

13. (Re-presented Original Claim 13) The method of claim 1, wherein: receiving a solicitation includes receiving, by the switch, a mirroring solicitation for a virtual target from the device; and

performing the storage service includes:

setting a flowID for the virtual target that indicates a mirrored virtual target having a first member and a second member, the second member having a link to the switch that is slow relative to a link between the first member and the switch;

receiving a data write command from an initiator to the mirrored target; multicasting the data write command to both members in accordance with the flowID;

receiving a ready-to-receive-data indicator from the first member;

obtaining from the initiator the write data and transmitting the data to the first member;

receiving a ready-to-receive-data indicator from the second member;

reading the write data from the first member and transmitting, by the switch, the data to the second member.

14. (Re-presented Original Claim 14) The method of claim 13, wherein setting a flowID for the virtual target includes updating a virtual target descriptor with the flowID.

15. (Re-presented Original Claim 15) The method of claim 13, wherein the second member is remote with respect to the switch and the first member is local with respect to the switch.

16. (Re-presented Original Claim 16) The method of claim 1, wherein:
receiving a solicitation includes receiving, by the switch, a snapshot solicitation for a virtual target, including a first member and a second member, from the device;
and

performing the storage service includes:

updating a flowID for the virtual target stored in the switch, wherein prior to updating, the flowID indicates that data is to be written to the first member and the second member, and after updating the flowID indicates that data is to be written to the first member and not the second member so that when a data write command is received by the switch it is sent only to the first member in accordance with the flowID;

sending an indication to the device that the snapshot solicitation is complete.

17. (Re-presented Original Claim 17) The method of claim 16, wherein updating a flowID for the virtual target includes updating a virtual target descriptor with the flowID.

18. (Re-presented Original Claim 18) The method of claim 1, wherein:
receiving a solicitation includes receiving, by the switch, a replication solicitation from the device to add a member to a virtual target, thereby forming a mirrored virtual target having a first member and a second member; and

performing the storage service includes:

updating a flowID stored in the switch for the virtual target, wherein prior to updating the flowID indicates that data is to be written to the first member and not the second member, and after updating the flowID indicates that data is to be written to

the first member and the second member so that when a data write command is received by the switch it is multicast to the first member and the second member in accordance with the flowID;

reading data from the first member and transmitting that data as write data to the second member;

notifying the device that the replication solicitation is complete.

19. (Re-presented Original Claim 19) The method of claim 18, wherein updating a flowID for the virtual target includes updating a virtual target descriptor with the flowID.

20. (Re-presented Original Claim 20) The method of claim 1, wherein:
receiving a solicitation includes receiving, by the switch, a third-party-copy solicitation from the device to copy data in a virtual target to a new medium; and
performing the storage service includes:

reading data from the virtual target and transmitting the read data to the new medium as write data;

notifying the device that the third-party-copy solicitation is complete.

21. (Original) A method for use by a switch in a storage network, the method comprising:

receiving, by the switch, a mirroring solicitation for a virtual target from a device in the storage network;

setting, by the switch, a flowID for the virtual target that indicates a mirrored virtual target having a first member and a second member;

receiving, by the switch, data to be written to the mirrored virtual target;

multicasting, by the switch, without buffering, the data to both members for writing in accordance with the flowID.

22. (Original) The method of claim 21, wherein multicasting the data write command includes adding the flowID to the data write command.

23. (Original) The method of claim 21, wherein:

the first member is a local member with respect to the switch and the second member is a remote member with respect to the switch; and

multicasting the data includes sending the data to the first member for writing, reading the data from the first member, and sending the read data to the remote member for writing.

24. (Original) The method of claim 23, wherein:

the second member is in communication with the switch over a link that is slow relative to a link between the switch and the first member; and

multicasting the data includes sending the data to the first member for writing, reading the data from the first member, and sending the read data to the second member for writing.

25. (Original) A method for use by a switch in a storage network, the method comprising:

receiving, by the switch, a mirroring solicitation for a virtual target from a device in the storage network;

setting, by the switch, a flowID for the virtual target that indicates a mirrored virtual target having a first member and a second member;

receiving, by the switch, a data write command from an initiator to the mirrored virtual target;

multicasting, by the switch, the data write command to both members in accordance with the flowID;

receiving, by the switch, a ready-to-receive-data indicator from each member, wherein each member specifies an amount of data it can receive, the first member

specifying a first amount and the second member specifying a second amount smaller than the first amount;

obtaining, by the switch, from the initiator the second amount of data, performing virtualization of the data without buffering, and transmitting the second amount of data as write data to the first member and the second member.

26. (Original) The method of claim 25, wherein multicasting the data write command includes adding the flowID to the data write command.

27. – 40. (Cancelled)